

# Acalyptrate flies (Diptera) from sifted materials in the Geneva Museum

by

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With 3 figures

## ABSTRACT

132 species of eleven acalyptrate families are recorded from the sifted materials in the Geneva Museum (2120 specimens in 556 vials). Flies were identified from 13 countries in the Palaearctic Region (almost all cantons of Switzerland, France, Czechoslovakia, Hungary, Spain, Italy, Yugoslavia, Greece, Cyprus, Morocco, Israel, Turkey and Iran). 58 species recorded as new for the fauna of Switzerland, 15 species for France and one to five species for Spain, Italy, Greece, Cyprus, Israel, Turkey and Iran. More extensive application of the sifting method for collecting dipterous flies is proposed. First of all the species of the family Sphaeroceridae are obtained by sifting and consequent funneling. 50 sphaerocecid species are recorded from Switzerland (33 for the first time), i.e. this is a contribution also to the better knowledge of the Swiss sphaerocerids.

## INTRODUCTION

While studying cavernicolous flies in the Muséum d'Histoire naturelle, Genève (PAPP 1979, 1982), some dipterous material, which had been collected by the scientists of the Département d'entomologie (Dr. Claude Besuchet (conservateur) and Dr. Ivan Löbl), were also studied. That material proved to be surprisingly interesting: not only new species but new genera of Sphaeroceridae were found (PAPP 1979, etc.). At the beginning those dipterous materials were by-products of collectings for Coleoptera but discovering the effectiveness of the sifting method also for flies, Drs Besuchet and Löbl continued selecting out this groups too from their materials more intensively. Another study trip to the Geneva Museum was recently aimed at the identification of all those materials and this was resulting in the publication of the present paper.

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The sifting method has been widely and long since used for collecting terricolous beetles and also some other arthropod groups. Acalyptrate flies have been seldom — if ever — reported from such materials. The big quantities of the sifted soil, etc. are put into funnels and the materials are finally collected in alcohol (floating may also be effective). The imagoes of the true terricolous flies (e.g. sphaerocerids, incl. fully-winged forms) overlive sifting and go directly to the collectors. Also the imagoes collected as pupae are gained.

Below species of eleven acalyptrate families are recorded but also species of at least other 29 dipterous families have been collected this way and now preserved in the collection of the Geneva Museum. These families are namely: Anisopodidae, Bibionidae, Scatopsidae, Cecidomyiidae, Sciaridae, Mycetophilidae, Bolitophilidae, Ceratopogonidae, Rhagionidae, Empididae, Dolichopodidae, Lonchopteridae, Syrphidae, Platypezidae, Pipunculidae, Phoridae, Sepsidae, Clusiidae, Anthomyzidae, Sciomyzidae, Psilidae, Opomyzidae, Otitidae, Chyromyidae, Agromyzidae, Chloropidae, Scathophagidae, Anthomyiidae and Muscidae. As regards at least the families Sciaridae, Cecidomyiidae and Phoridae, the materials are considerable. The richness of the phorid forms is surprising. I want to give some comments on the families which were elaborated now.

The larvae of the majority of the species of Lauxaniidae are phytosaprophagous developing in forest litter, in wood debris, mining in dead leaves, etc. It is a matter of course that their pupae (and larvae) are collected also by sifting. The imagoes usually emerge from the sifted samples while in funnels, this way immature but intact specimens are gained.

As it has repeatedly been published (e.g. ROHÁČEK 1978, PAPP 1976), a very significant number of the sphaerocerid species of a given area is terricolous. The percentage of the species with these life-habits may be over 50 percent. Pitfall traps (Barber traps) have been proposed for the collecting of them, and they have been used with good results. As regards the sphaerocerid fauna of Switzerland, ROHÁČEK (1982) wrote with good reason that "... some countries have been practically neglected by collectors up to the present (e.g. ... Switzerland...". The situation is changing in this respect, since 50 species are published below for Switzerland, 33 for the first time. Together with species reported from Swiss caves, we may say that about a half of the sphaerocerid fauna of Switzerland has been known. In connection with the superb work of ROHÁČEK (1982) it must be noted that in this paper the names and taxonomical classification used in the new Catalogue of Palaearctic Diptera (Soós (ed.) 1983) are adopted, except for sphaerocerids, since unfortunately ROHÁČEK's work was published after the deadline for manuscripts for the Volume 10 of that catalogue.

There are a number of terricolous species also among the drosophilids (*S. (Parascaptoomyza) pallida* and species of the subgenus *Lordiphosa* are known as terricolous or at least pupae found mainly there). Sometimes several other species are also collectible. The life-habits of the species of the families Asteiidae, Camillidae, Milichiidae and Carnidae are so little known that every datum for them must be regarded as important.

Also several new species to science were found in materials from the Palaearctic (in the genera *Eccoptomera*, *Philygria*, *Pullimosina* and *Phyllomyza*) but I propose to publish their description elsewhere.

Below the species are listed in a taxonomical order. As regards the families Ephydriidae, Anthomyzidae and Sepsidae, not all of the species present in these materials were identified; their inclusion in this publication is only to demonstrate the effectiveness of the method also for their collecting.

The materials are preserved in alcohol. Beside the localities the altitude range, data on habitats (in original, in French), the first and the last days of collecting of the specimens and the number of specimens are also given. The collector's names are in brackets. The

overwhelming majority of them is deposited in the collection of the Département d'entomologie, Muséum d'Histoire naturelle, Genève, a limited number of the duplicates is in the Zoological Department of the Hungarian Natural History Museum, Budapest and in the General Zoology and Parasitology Department of the University of Veterinary Sciences, Budapest, respectively.

## SEPSIDAE

***Sepsis biflexuosa* Strobl, 1893**

France: Ain: Le Grand Crêt d'Eau, pied rochers, 1600 m, 17.IX.78 (Besuchet): 1 ♂, 1 ♀. — A common Palaearctic species, which is developing mainly in cattle droppings.

***Sepsis cynipsea* Linnaeus, 1761**

France: Haute-Savoie: Le Môle, 1800 m, mousses, 17.VII.79 (Besuchet): 1 ♂. — An easily recognizable species with coprophagous habits.

***Sepsis fulgens* Hoffmannsegg, 1826**

Switzerland: Valais: s/Liddes, 1450 m, fumier, 24.VI.76 (Besuchet): 1 ♂. — A widespread species developing in various kinds of mammal droppings and also on dung heaps; the specimens are spreading also by wind, so specimens can also be found on places free of dung.

***Sepsis neocynipsea* Melander and Spuler, 1917**

Switzerland: Vaud: Suchet. France: Savoie: Mont-Jovet. (Besuchet, Löbl). Altitude range: to 2100 m. Data on habitats: mousses, rhododendrons; 3.VIII-14.X. 11 specimens in two vials. — This is a Holarctic species, it seems characteristic for the alpine pastures in Europe, where the larvae develop in cattle droppings. New to Switzerland.

## LAUXANIIDAE

***Homoneura biumbrata* (Loew, 1847)**

Switzerland: Valais: Grône, Punta Fontana, 26.IX.80 (Besuchet): 1 ♂, 2 ♀. — New for the fauna of Switzerland. Its distribution covers central and south parts of Europa. The phytosaprophagous habits are characteristic for the majority of the species of the family Lauxaniidae but rather few real data have been obtained, incl. this species.

***Homoneura subnotata* L. Papp, 1978**

France: Basses-Alpes: Riez, pied souche peuplier, 4.VI.78 (Besuchet-Löbl): 1 ♂. — A rare European species new to France. This specimen is much immature and it emerged obviously from the sample; this is the very first record for its biology.

***Homoneura* sp.**

Switzerland: Genève: Allondon-Malval, lavage gravier, 11.VI.80 (Besuchet-Löbl): 1 ♀. Unfortunately it was impossible to identify it being a female but it is surely not conspecific with any of the above specimens.

***Minettia bulgarica* L. Papp, 1981**

Iran: Kohkiluyeh, Charam, 23.V.74 (Senglet): 2♂. — A recently described species new to Iran and also to the Asiatic part of the Palaearctis.

***Minettia inusta* (Meigen, 1826)**

Switzerland: Genève: Frontenex. France: Pyr. or.: Taurinya; Haute-Savoie: s/Arcine. Spain: Prov. Zamora: env. de Sandin de Carballada. Turkey: Zonguldak: s/Zonguldak. Altitude range: only to 750 m. Data on habitats: au pied platane, pied paroi rochers; 23.V.-1.VII. 10 specimens in 5 vials. — Hitherto known from South and Central Europe, new to Switzerland and Turkey.

***Minettia rivos*a (Meigen, 1826)**

France: Hérault: Montagnes de la Fontignon, 1.VII.78 (Haymoz): 7 ♂, 4 ♀. — In all probability this is the most common species of this genus but the different populations show minor differences also in the male genitalia.

***Peplomyza litura* (Meigen, 1826)**

Switzerland: Tessin: Bruzella and Chiasso; Valais: Grône, Punta Fontana. France: Pyr. or.: massif du Canigou: forêt de Llech; Basses-Alpes: Riez; Haute-Savoie: s/Arcine. Italy: Cuneo: Cantarano. (Besuchet, Löbl). Altitude range: to 1000 m. Data on habitats: pied souche peuplier, pied paroi rochers, feuilles mortes, ravin avec châtaigniers + hêtres, lavage de terre; 3.VI.-26.IX. 11 specimens in 8 vials. — A species of the deciduous forests of South and Central Europe. New to Switzerland. Several specimens emerged from sifted samples, its larvae live in the forest litter.

***Lyciella conjugata* (Becker, 1895)**

France: Isère: s/Chalais; Pyr. or.: Col de Jan, massif du Canigou: forêt de Llech; Hautes-Alpes: Col de Gleize/Gap; Basses-Alpes: s/Valbelle, Montagne de Lure: Pas de la Graille, Serre de Montdenier; Drôme-Vercors: Forêt de Lente. (Besuchet, Löbl). Altitude range: 900 m to 1550 m. Data on habitats: feuilles mortes de hêtre (several records); 3.VI.-5.VII. 41 specimens in 8 vials. — A rare European species. Its distribution is almost unknown since it was frequently misidentified by earlier authors. I regard the above data the first reliable ones for France. Nearly all specimens were reared from the samples.

***Lyciella laeta* (Zetterstedt, 1838)**

Switzerland: Schwyz: Fronalp. France: Basses-Alpes: Montagne de Lure: Pas de la Graille. (Besuchet, Löbl). Altitude range: 1550-1600 m. Data on habitats: feuilles mortes de hêtre, tamisage sous *Picea* et *Alnus*; 3.-28.VI. Eight specimens from two localities. — This is an oreoalpin species, common in North Europe (e.g. Lappland) but it occurs in the higher altitudes of Central Europe only. New to Switzerland.

***Lyciella pallidiventrif* (Fallén, 1820)**

Switzerland: Genève: Frontenex, au pied d'un chêne, 5.VI.80 (Besuchet): 1 ♀. — A rare but widespread European species.

***Lyciella rorida* (Fallén, 1820)**

France: Haute-Savoie: s/Arcine. Italy: Cuneo: Valcasotto. Spain: Prov. Zamora: env. de Sandin de Carballeda. (Besuchet, Löbl, Haymoz). Altitude range: 750 m to 1200 m. Data on habitats: pied paroi rochers, hêtres, érables, fougères; 10.VI.-VII. Six specimens from three localities. — It is a comparatively well-known Palaearctic species; its larvae develop in wood debris, in forest litter and in decaying mycelious dead wood.

***Lyciella subfasciata* (Zetterstedt, 1838)**

France: Haute-Savoie: Salève, Observatoire, 1200 m, lappiaz, 17.VI.82 (Besuchet): 1 ♂. — Its distribution is sparsely known, since specimens of *illota* or *mihalyii* were published under this name by earlier authors. New to France; revised data from North Europe, England and from the Carpathian Basin.

***Lyciella (Meiosimyza) platycephala* (Loew, 1847)**

France: Haute-Savoie: Salève, Grand Piton. Italy: Cuneo: Valcasotto-Turbiglie. (Besuchet, Löbl). Altitude range: to 1200 m. Data on habitats: fagetum, lappiaz; 17.-19.VI. Four specimens from two localities. — A West-Palaearctic species. One of the specimens was reared from the sifted sample.

***Sapromyza (Sapromyzosoma) quadripunctata* (Linnaeus, 1766)**

Switzerland: Genève: Allondon-Malval, lavage gravier, 11.VI.80 (Besuchet-Löbl): 1 ♀. — A widespread Palaearctic species but this is its first reliable datum for Switzerland.

***Sapromyza apicalis* Loew, 1847**

France: Pyr. or.: massif du Canigou: forêt de Llech. Spain: Prov. Zamora: env. de Sandin de Carballeda. (Löbl, Haymoz). Altitude range: 750 m to 1000 m. 21.VI-VII. 12 specimens from two localities. — A West-Palaearctic species, which seems more frequent in the southern countries.

***Sapromyza biordinata* Czerny, 1932**

Iran: Teheran: Delickal; Fars: Ghaderabad; Lorestan: Azna; Bakhtiyari: Kuhrang; Hamedan: Ganznameh (Senglet). Altitude range: to 2100 m. 11.VI-24.VII. 24 specimens from 5 localities. — Its distribution is restricted to Iran, Afghanistan and southernmost parts of the USSR (Caucasus, Middle Asian republics).

***Sapromyza obscuripennis* Loew, 1847**

France: Basses-Alpes: s/Valbelle and Serre de Montdenier. (Besuchet-Löbl). Altitude range: 900 m to 1300 m. Habitat: feuilles mortes de hêtre; 3-4.VI. Two males. — A rare European species new to France. Both of the specimens are immature, emerged from the samples. These are the first data for the habits of larvae.

***Sapromyza setiventris* Zetterstedt, 1847**

Switzerland: Valais: Saint-Maurice, feuilles mortes, 11.VII.80 (Besuchet): 2 ♀. — A little known European species new to Switzerland.

***Calliopum simillimum* (Collin, 1933)**

Switzerland: Genève: Croix-de-Rozon and Les Baillels. (Besuchet). Data on habitats: vieux bois, marais; 20.V-5.VI. Two females. — A common European species new to Switzerland. Its distribution ranges to the northern limit of deciduous forests.

## HELEOMYZIDAE

***Suillia pilimana* (Loew, 1862)**

Switzerland: Tessin: s/Lac Efra, 1850-1900 m, 31.VIII.78 (Löbl): 1 ♂, 1 ♀. — Hitherto known only from central areas of Europe, new to Switzerland; its life-habits are unknown.

**Suillia villeneuvei** Czerny, 1924

France: Haute-Savoie: Avoriaz, mousses, 1830 m, 3.IX.78 (Besuchet): 1 ♂. — A rare European species with unknown life-habits.

**Eccoptomera ornata** Loew, 1862

Switzerland: Berne: Stockhorn; Vaud: La Dôle. (Besuchet, Löbl). Altitude range: 1300 m to 2000 m. Data on habitats: feuilles mortes, mousses; 26.VII.-13.IX. Three specimens in two vials. — A rare European species (from England to North Italy); only one citation from Switzerland (MATILE 1962: 127). Its larvae are developing in nests of small mammals.

**Morpholeria variabilis** (Loew, 1862)

Switzerland: Valais: Fluhalp/Leukerbad, 2000 m, 14.IX.80 (Besuchet): 1 ♂. — A rare psychrophilous European species; in south parts of its area it occurs only in higher altitudes. First proved record for Switzerland.

**Heteromyza atricornis** Meigen, 1830

Switzerland: Genève: Pregny. France: Var: La Sainte-Baume. (Besuchet-Löbl). Data on habitats: vieilles souches, souches creuses. 30.III.-12.VII. Six males in two vials. — It is a well-known species of the European caves (PAPP 1982). It seems worth mentioning that now only males were found, contrarily to caves where the number of females is extremely higher and there its reproduction also by parthenogenesis has been supposed.

## ANTHOMYZIDAE

**Stiphrosoma sabulosum** (Haliday, 1837)

Hungary: Hortobágy N. P.: Egyek, Ohati erdő, feuilles mortes, 17.VII.78 (Besuchet): 1 ♀. — This is a seldom collected but common brachypterous species. Our specimen is immature, emerged from the sifted sample.

## EPHYDRIDAE

**Psilopa polita** (Macquart, 1835)

Switzerland: Genève: Malval; Valais: Finges. France: Gard: Goudargues (Besuchet, Baud). Data on habitats: vieilles souches pin, mousses + herbes; 5.IV.-22.X. Seven specimens from three localities. — A common a widespread Palaearctic species. As far as I know, hitherto has not been recorded from Switzerland.

***Discocerina obscurella* (Fallén, 1813)**

Switzerland: Vaud: Chêne/Bex. France: Haute-Savoie: Thonon-Vongy, crue de la Dranse (Besuchet). Habitat: fumier; 12.VII.-25.X. Two females. — A widespread species new to Switzerland.

***Discomyza incurva* (Fallén, 1823)**

Switzerland: Vaud: Marchairuz. France: Haute-Savoie: Grand Salève (Besuchet). Altitude range: to 1350 m. Data on habitats: mousses + feuilles mortes, lappiaz; 11.-28.X. Three specimens from two localities. — New to Switzerland. Its larvae are probably polysaprophagous, e.g. they have been reared from dead snails.

***Clanoneurum cimiciforme* (Haliday, 1855)**

Iran: Teheran: Ab Garm, 5.VII.74 (Senglet): 1 ♀. — New to Iran. Its larvae are miners in species of Chenopodiaceae (Beta maritima, etc.).

***Hydrellia albilabris* (Meigen, 1830)**

Switzerland: Genève: Bois du Château près de Vernier, bord étang, 12.VIII.81 (Besuchet): 11 ♂, 13 ♀. — New to Switzerland. Its larvae are miners in aquatic plants, including submerged ones.

***Hydrellia griseola* (Fallén, 1813)**

France: Goudargues, VII.74 (Baud): 1 ♂. — This a well-known pest of rice in all parts of the World; it is interesting to have it by this method.

***Nostima picta* (Fallén, 1813)**

France: Hérault: Ganges, crue de l'Hérault, 21.XI.82 (Besuchet): 1 ♀. — A fairly common European species. Our specimen is much immature, its wings are not extended, i.e. it was emerged from the sample.

***Nostima semialata* (Collin, 1913)**

Switzerland: Vaud: Ollon. France: Savoie: Mont-Jovet (Besuchet, Löbl). Altitude range: to 2100 m. Data on habitats: vieille souche, rhododendrons; 14.X.-30.XII. Four specimens from two localities. — New to Switzerland and to France. This is a micropterous species, obviously terricolous but there are no definite data for its life-habits. Hitherto known only from England and Hungary.



**Philygria maculipennis** (Robineau-Desvoidy, 1830) (= *sexmaculata* Becker, 1896)

Switzerland: Vaud: Suchet, 1500 m, mousses, 3.VIII.79 (Besuchet): 1 ♂. — New to Switzerland; a rare European species with unknown habits. It has hardly been collected by net since it seldom flies. A related species with reduced wings is to be described from the Alps.

**Axysta cesta** (Haliday, 1833)

Switzerland: Vaud: Chavornay, marais, 27.VIII.81 (Besuchet): 1 ♂. — A very rare European species new to Switzerland.

**Coenia curvicauda** (Meigen, 1830)

Switzerland: Vaud: Bavois, marais, mousses, 15.V.79 (Besuchet): 1 ♀. — A seldom collected European species new to Switzerland. Its larvae are developing in ponds and in marshes.

**Limmellia quadrata** (Fallén, 1813)

Switzerland: Berne: Burgdorf; Fribourg: Vaulruz-Sâles; Vaud: Suchet. Italy: Cuneo: Valcasotto-Turbiglie. Altitude range: to 1500 m. Data on habitats: feuilles mortes, mousses, ravin dans fagetum, mousses d'une tourbière; 17.III.-18.X. Six specimens from four localities. — A widespread species new to Switzerland. Its larvae are probably saprophagous in wet forest litter.

## SPHAEROCIDAE

**Sphaerocera curvipes** Latreille, 1805

Switzerland: Grisons: Stallenberg (sur Juf); Tessin: Bella Vista-Monte-Generoso; Schwyz: Fronalp; Valais: Pas de Lin, s/Saxon et au-dessus de Liddes; Vaud: Grand-Risoux, Bavois, Les Echadets, grotte à Mahomet, Suchet, Glacière de Saint-George. France: Ain: Mont-Rond; Isère: Chartreuse, Charmant-Som; Haute-Savoie: Le Môle; Gard: Goudargues. Italy: Cuneo: Valcasotto-Turbiglie, entrée Grotte della Turbiglie. Yugoslavia: Slovenia: Postojna. (Besuchet, Löbl, Comellini, Baud.) Altitude range: to 2500 m. Data on habitats: mousses, feuilles mortes, marais, fumier, terre avec racines, ravin dans fagetum, tamisages sous rhododendrons, pins, Picea et Alnus; 15.V.-17.VIII. 66 specimens in 21 vials. — This species is widely known as a cosmopolitan, synanthropic species developing in dung. On the base of the above data we may deduce that its larvae can live also upon other dead organic matters (it has been collected also on carrion in Hungary).

**Sphaerocera monilis** Haliday, 1836

Switzerland: Genève: Croix-de-Rozon; Thurgovie: Kreuzlingen (Besuchet). Data on habitats: vieux bois, vieux foin; 20.V.-7.VIII. 3 specimens in 2 vials. — A psychrophilous terricolous species, its larvae are developing in mycelia, sometimes in fruiting bodies of mushrooms (PAPP 1973). A species new to Switzerland.

**Ischiolepta denticulata** (Meigen, 1830)

(= *paracrenata* (Duda, 1920), *falcozi* (Duda, 1921))

Switzerland: Fribourg: Vaulruz-Sâles, mousses tourbière, 18.X.80, Besuchet: 1 ♀. — It is a very seldom collected European species, because of its terricolous habits, it is collectable only by sifting, soil trapping or singling on wet forest soil. New to Switzerland.

**Ischiolepta pusilla** (Fallén, 1820)

Switzerland: Genève: Vers-Vaux près Chancy; Thurgovie: Kesswil and Kreuzlingen; Vaud: Marchairuz. France: Hautes-Alpes: Abriès (Besuchet). Altitude range: to 1350 m. Data on habitats: mousses, lappiaz, feuilles mortes, vieux fumier, vieux foin; 9.V.-25.X. 17 specimens in 5 vials. — It was known as a coprophagous species developing mainly on dung heaps (PAPP 1973) and spreading by the human activity in the World. New collectings (incl. the above data) cleared up its terricolous habits, the larvae are probably micromycophagous (see more in PAPP & ROHÁČEK 1984).

**Copromyza (Olinea) atra** (Meigen, 1830)

Switzerland: Berne: Stockhorn; Fribourg: Moléson, Vaulruz-Sâles; Genève: Malval; Thurgovie: Sommeri; Valais: Pas-de-Lin s/Saxon; Vaud: Marchairuz, La Dôle, Suchet. France: Haute-Savoie: Le Môle (Besuchet, Löbl). Altitude range: to 1900 m. Data on habitats: mousses, tas bois pourri, lappiaz, feuilles mortes, mousses tourbière, mousses+herbes; 10.V.-22.X. 17 specimens in 11 vials. — A common Holarctic species of wide ecological valence (RICHARDS 1930, PAPP 1973), it has been collected in various kinds of mammal droppings, on dung heaps, in small mammal runs, on decaying mushrooms and on human feces.

**Copromyza (Crumomyia) freyi** Hackman, 1965

Switzerland: Appenzell: Hoher Kasten; Thurgovie: Güttingen; Vaud: La Dôle. France: Haute-Savoie: s/Cascade de Sales (Besuchet, Löbl). Altitude range: to 1700 m. Data on habitats: mousses, feuilles mortes, bois pourri; 18.I., 18.VIII., 13.IX., 5.X. 7 specimens in 4 vials. — Hitherto known only from Finland and Mongolia; only one citation from Switzerland (PAPP 1982: 17); new to France. Norrbom (in litt.) is going to synonymize it with a Nearctic species and thus its distribution could be regarded circumpolar-alpin; until publication of his results this name is used for this species.

**Copromyza (Crumomyia) glabrifrons** (Meigen, 1830)

Switzerland: Berne: Stockhorn; Saint-Gall: Säntis; Tessin; Mte Generoso; Vaud: Bavois, Le Soliat. France: Ain: Crêt du Merle; Haute-Savoie: Salève, Tête du Parmelan, Mont-Semnoz, Crêt de Châtillon, Le Môle. Turkey: Zonguldak: au-dessus de Zonguldak. Cyprus: Troodhitissa Monastery (Besuchet, Löbl). Altitude range: 500 m (Turkey) to 2475 m (Alps). Data on habitats: mousses, feuilles mortes, terre et racines graminées, lappiaz, marais, fougères. 11.IV.-28.X. 90 specimens in 20 vials. — A species living in soil and in the entrance zone of caves. New to Cyprus; from Switzerland and France it has been known only from caves (PAPP 1982: 17).

**Copromyza (Crumomyia) nigra** (Meigen, 1830)

Switzerland: Tessin: Monte-Generoso. France: Ain: Grand Colombier (Besuchet, Löbl). Altitude range: 1600 to 1950 m. Data on habitats: mousses, Fagetum; 18.-26.V. 2 specimens in 2 vials. — Common species in the West Palaearctis (ROHÁČEK 1976), frequently found on cattle and sheep droppings on pastures and in the entrance zone of caves.

**Copromyza (Crumomyia) notabilis** (Collin, 1902)

France: Haute-Savoie: s/Arcine; feuilles mortes de hêtre, 20.V.78 (Besuchet). A white immature specimen, it was obviously emerging from the sample. New for the fauna of France.

**Copromyza (Crumomyia) parentela** Séguy, 1963

Switzerland: Uri: Oberalppass, 2050 m, 18.VIII.81 (Löbl): 1 ♀, Fribourg: Moléson, 1900 m, 26.VIII.78 (Besuchet): 1 ♂. Italy: Cuneo: Valcasotto, entrée Grotta delle Turbiglie, 19.VI.82 (Löbl): 2 ♂. Altitude range: 1000 m to 2050 m. Data on habitats: mousses, feuilles mortes, cave entrance. 4 specimens in 3 vials. — It was known only from a cave in Yugoslavia but most recently a new subspecies was discovered in France (Saint-Vincent Cave) by PAPP & ROHÁČEK (1983). The species is new for the fauna of Switzerland and of Italy; these data are very important for a better understanding of its distribution (cf. PAPP & ROHÁČEK 1983). The female of this material was identified by its shining body, reduced eyes and by its evenly narrow abdominal sternites.

**Copromyza (Crumomyia) rohaceki** A. Norrbom (in litt.)

(= *glacialis* (Meigen, 1830) sensu auctorum)

France: Haute-Savoie: Lac Jovet, 2200 m, 4.IX.80 (Löbl): 1 ♂. Two females from these materials probably belong to this species: Switzerland: Thurgovie: Güttingen, 18.I.83; Valais: Torrenthorn, 12.IX.80 (Besuchet). Altitude range: to 2500-2600 m. Data on habitats: rhododendrons, bois pourri. The specific name *glacialis* (Meigen, 1830) was widely used for this species. Most recent studies of Allen Norrbom (Pennsylvania State University) have revealed that the holotype of *glacialis* from the Mont-Blanc is not conspe-

cific with other European materials identified as *glacialis*; a new subspecies of the true *glacialis* was described by PAPP & ROHÁČEK (1983) from the Saint-Vincent Cave (France). I use this new name deliberately only to call attention to this taxonomic problem. This species has been known from France from cave materials only; new to Switzerland.

#### **Copromyza (Crumomyia) zuskai** Roháček, 1976

Switzerland: Vaud: Fracherets s/Gryon, sur la neige, 1600 m, 24.XII.78 (Besuchet): 1 ♀. France: Hautes-Alpes: Col du Lautaret, mousses, feuilles mortes, 1900 m, 26.IX.80 (Besuchet): 1 ♂, 2 ♀; Céüse, pied rochers, 1500 m, 30.XI.81 (Besuchet): 1 ♂. Five specimens in three vials. — Hitherto known from Czechoslovakia and Austria only, new to Switzerland and to France. The females were identified by presence of small bristles between basal and apical scutellars, having 1 + 3 dc pairs and abdominal sternites widening posteriorad. It seems sure that this species is restricted to high altitudes of central parts of Europe.

#### **Copromyza (Fungobia) fimetaria** (Meigen, 1830)

Switzerland: Valais: s/Vernayaz, 800 m, 7.X.80, mousses (Besuchet): 1 ♀. — A European species new to Switzerland. Its imagoes were collected in wet forest litter, on decaying mushrooms and on carrion.

#### **Copromyza (Fungobia) nitida** (Meigen, 1830)

Switzerland: Appenzell: Schwägalp; Bâle: Ob. Belchen; Grisons: Val Tuai; Fribourg: Vaulruz-Sâles; Schwyz: Fronalp; Vaud: Bavois, Crêt de la Neuve, s/Saint-George, Les Echadets, entrée de la grotte à Mahomet, Suchet; Thurgovie: Sommeri. France: Haute-Savoie: Salève, Le Môle (Besuchet, Löbl, Comellini). Altitude range: 1000 to 2000 m. Data on habitats: mousses, rhododendrons et pins, pied Alnus, feuilles mortes, marais, mousses tourbière, lappiaz; 10.V.-28.X. 21 specimens in 14 vials. — A common European species; the life-habits must be similar to those of the preceding species but it was more frequently collected in caves entrance and intermediate zones.

#### **Copromyza (Fungobia) pedestris** (Meigen, 1830)

Switzerland: Genève: Mategnin, 8.VI.81, herbes détrempées (Besuchet). — The wings of this species are usually much reduced but in southern parts of its area fully-winged specimens have been collected (the male in this material has wings less reduced: they exceed the middle of abdomen). Its larvae are developing mainly in dead snails. New to Switzerland.

#### **Copromyza (Fungobia) roseri** (Rondani, 1880)

France: Drôme: Forêt de Saou, 29.IX.81, feuilles mortes (Besuchet). — A rare and very little known species. Some citations from French caves (PAPP 1982: 18).

**Copromyza (Borborillus) vitripennis** (Meigen, 1830)

Iran: Azerbaïdjan: Hero-Abad, 10.VIII.74 (Senglet). — It is a coprophagous species developing in droppings of horses, donkeys, etc. New to Iran and to the Asian part of the Palaearctic.

**Copromyza (Copromyza) equina** Fallén, 1820

Iran: Hamedan: Ganznameh, 2100 m, 4.VII.74 (Senglet). — A Holarctic coprophagous species, this is its first positive record from Iran.

**Copromyza (Copromyza) pseudostercoraria** L. Papp, 1976

France: Savoie: Cornet d'Arêches s/Aime, 1900 m, 15.X.81, mousses sous rhododendrons et aulnes (Löbl): 1 ♀, 1 ♂. Iran: Hamedan: Asadabad, 2.VII.74 (Senglet): 1 ♀. — A species hitherto known only from Hungary, new to France. I identified the above female from Iran with some doubt but it has the same features as the types of *pseudostercoraria*, only its discal cell is without a vein appendage.

**Copromyza (Copromyza) stercoraria** (Meigen, 1830)

Switzerland: Genève: Mategnin; Glaris: Klöntalersee; Valais: Fluhalp/Leukerbad; Vaud: Crêt de la Neuve. France: Savoie: Chartreuse: Mont-Joigny; Mont-Jovet; Haute-Savoie: Grand Salève (Besuchet, Löbl). Altitude range: 850 to 2100 m. Data on habitats: mousses, feuilles mortes, herbes détrempeées, rhododendrons, terre noire et pied rochers; 18.VI.-28.X. 7 specimens in 7 vials. — It is a terricolous species, found in runs of small mammals, in wet deciduous forests, on sea-shores.

**Coproica ferruginata** (Stenhammar, 1854)

Spain: Prov. Zamora: Env. de Sandén de Carballeda, 750 m, VII.79 (Haymoz) 1 ♀. — A widespread and common coprophagous species (PAPP 1973).

**Coproica lugubris** (Haliday, 1836)

Switzerland: Saint-Gall: Säntis, 2450 m, tamisage, 11.IX.81 (Besuchet): 1 ♂. Known as a Palaearctic species developing in droppings; it has never been collected in such a high altitude in Europe.

**Thoracochoeta zosteræ** (Haliday, 1833)

France: Haute-Savoie: Thonon-Vongy, crue de la Dranse, 12.VII.80 (Besuchet): 1 ♀. — A species with very interesting life-habits: its larvae are developing in rotten sea-weed on sea-shores and in cesspools.

**Trachyopella atoma** (Rondani, 1880)

Switzerland: Genève: Frontenex, 29.X.82, souche creuse (Besuchet): 1 ♀. — The larvae develop in rotten hay, in kitchen refuses, on dung heaps, etc. It became widespread through human activity. New to Switzerland.

**Trachyopella kuntzei** (Duda, 1918)

Switzerland: Genève: Vers-Vaux près de Chancy and Frontenex; Thurgovie: Kreuzlingen (Besuchet). Data on habitats: vieux foin, mousses près du Rhône; 19.VI-7.VIII. Seven specimens in three vials. — Hitherto known only from Germany, Czechoslovakia and Hungary, new to Switzerland. In Hungary it seems common but it is seldom collected owing to its minute size and life-habits: the larvae are developing in decaying grass or hay in wet places.

**Halidayina spinipennis** (Haliday, 1836)

Switzerland: Berne: Stockhorn. France: Hautes-Alpes: s/Fontgillarde; Haute-Savoie: Col des Aravis (Besuchet) — Altitude range: 1700-2000 m. Data on habitats: mousses, feuilles mortes; 19.VII-26.IX. Five specimens in three vials. Its larvae develop mainly in dung, the above records are interesting for the better knowledge of its life-habits. New to Switzerland.

**Chaetopodella scutellaris** (Haliday, 1836)

Switzerland: Genève: Frontenex, Malval, Vers-Vaux près de Chancy; Fribourg: Vaulruz-Sâles; Vaud: Les Echadets. France: Haute-Savoie: Grand Salève (Besuchet). Altitude range: to 1400 m. Data on habitats: mousses, souche creuse, feuilles mortes, mousses + hépatiques, mousses tourbière; 29.IV.-29.X. 23 specimens in 8 vials. — A widespread coprophagous species but hitherto no published record for Switzerland.

**Puncticorpus cribratum** (Villeneuve, 1918)

Switzerland: Genève: Frontenex, Corsier-Port, Pregny; Tessin: Caviano. France: Hautes-Alpes: Devoluy: Le Seresq; Seine-et-Marne: Forêt de Fontainebleau: Gros-Fouteau. Yugoslavia: Slovenia: Postojna. Greece: Lefkas: Moni. Cyprus: Ayios Neophytos Monast., Kritou Terra, Polis, Moniatis. Turkey: Mersin: 17 km N Mersin; Antakya: Kislak-Senköy; Antalya: 20 km N Manavgat; Zonguldak: entre Eregliet Baliköy. Israel: Judée: Mevasseret (Besuchet, Löbl). Altitude range: to 850 m (Turkey), 700 m (Cyprus). Data on habitats: feuilles mortes, vieilles souches, mousses, tamisage pied roseaux, souches creuses, piège à bière; 26.III.-23.X. 26 specimens in 19 vials. — A true terricolous species with reduced wings; some of the above specimens were obviously emerged from the sifted sample, they are immature and colourless. The larvae develop in mycelia of forest litter and in

decaying fruiting bodies of numerous species of mushrooms. A part of the above localities has been published by ROHÁČEK & MARSHALL (1982) from this material, recording this species as new for Yugoslavia and Switzerland. The above data widen much more its known area: they are the first records for Greece, Turkey, Cyprus and Israel. It is surely not a Central European geoelement (cf. ROHÁČEK & MARSHALL) but these data corroborate the theory of its probable way of evolution of an ancestor, which lived in the Mediterranean glacial refuge, as proposed by ROHÁČEK & MARSHALL (1982).

***Puncticorpus lusitanicum* (Richards, 1963)**

France: Aude: Montagne d'Alaric, versant N, feuilles mortes, 25.XI.80 (Besuchet-Löbl): 1 ♂. This specimen emerged from that sample since it is colourless, wings are partly extended. Hitherto known only from Portugal, South Spain and North Morocco (PAPP 1982, ROHÁČEK & MARSHALL 1982); new for the fauna of France.

***Pteremis fenestralis* (Fallén, 1820)**

Switzerland: Fribourg: Vaulruz-Sâles, Cheyres; Genève: Moulin-de-Vert, Vers-Vaux près de Chancy, Mategnin, Les Baillets, Malval; Tessin: Denti della Vecchia, Monte-Generoso; Valais: Zeneggen, s/Vernayaz, Pas de Lin s/Saxon; Vaud: Prévondavaux, Suchet, Bassins-Arzier, Chavornay, Grand Risoux, Tour d'Aï. France: Haute-Savoie: Le Môle, Salève; Savoie: Mont du Chat; Ain: Le Grand Crêt d'Eau; Drôme: Forêt de Saou. Hungary: Aggtelek. Italy: Cuneo: Valcasotto-Turbiglie (Besuchet, Löbl). Altitude range: to 2100 m. Data on habitats: mousses marais, mousses tourbière, pied rochers, feuilles mortes, ravin, fagetum, racines graminées, herbes détrempées, touffes herbes; 12.IV.-5.XII. 96 specimens in 27 vials. — A European species, which is more frequent in the northern countries of Europe. New to Switzerland and to Italy. Some of the above specimens belong to the "forma *nivalis*", i.e. their wings are reduced. These data represent an important contribution to the better knowledge of its life-habits, too.

***Opacifrons coxata* (Stenhammar, 1854)**

Switzerland: Saint-Gall: Schwendisee/Unterwasser. Iran: Hamedan: Ganznameh; Ilam: Sarab Eyvan (Besuchet, Senglet). Altitude range: to 2100 m (Iran). Data on habitats: mousses au bord lac; 26.VI.-12.IX. Three specimens in three vials. — A widespread species new to Iran. The imagoes are usually collected in wet places, seashores, etc.; the larvae develop probably in mud.

***Opacifrons humida* (Haliday, 1836)**

Switzerland: Vaud: Glacière de Saint-George, 1287 m, 15.VIII.79, terre d'éboulis (Besuchet-Comellini): 1 ♀. — An Old World species with life-habits similar to the preceding species.

**Opacifrons septentrionalis** (Stenhammar, 1854)

France: Haute-Savoie: Thonon-Vongy, crue de la Dranse, 12.VII.80 (Besuchet): 2 ♂. The specimens are immature, their wings inflated, i.e. they were reared from the sifted sample. This is a little known Palaearctic species, which is rather rare in central parts of Europe. New to France.

**Leptocera (Leptocera) fontinalis** (Fallén, 1826)

Switzerland: Bâle: Ob. Belchen; Fribourg: Vaulruz-Sâles; Genève: Frontenex, Corsier Port; Grisons: Pürderbach; Vaud: Le Brassus, Suchet, Les Echadets, La Dôle. France: Hautes-Alpes: Devoluy: Le Seresq, Abriès; Col du Lautaret; Savoie: Chartreuse; Mont-Joigny, Mont du Chat; Haute-Savoie: Ubine, s/Vacheresse, Salève, Le Môle; Drôme: Vercors; Gard: Goudargues (Besuchet, Löbl, Baud, Comellini). 1 ♀ of the *fontinalis*-group: Iran: Bakhtiyari: Kuhrang, 17.VI.74 (Senglet). Altitude range: to 1950 m. Data on habitats: mousses, tamisages tourbière, vieilles souches hêtre, feuilles mortes, mousses + hépatiques, souche creuse peuplier; 10.IV.-27.X. 33 specimens in 22 vials. — A common species with wide Holarctic area, frequently found also in the entrance zone of caves.

**Leptocera (Leptocera) nigra** Olivier, 1813

Switzerland: Genève: Malval. France: Hérault: Ganges, crue de l'Hérault (Besuchet). Data on habitats: mousses + lichens dans prairie sèche; 22.X.-21.XI. Two specimens. — These specimens were freshly reared from the sifted sample, so we can suppose that it overwinters in the nature as pupae.

**Leptocera (Rachispoda) lutosa** (Stenhammar, 1854)

Spain: Prov. Zamora: Env. de Sandin de Carballeda, VII.79 (Haymoz): 1 ♂. It is a widespread Holarctic species but this is its first record from Spain.

**Limosina silvatica** (Meigen, 1830)

Switzerland: Bâle: Ob. Belchen; Berne: Stockhorn; Fribourg: Vaulruz-Sâles; Genève: Croix-de-Rozon, Frontenex; Schwyz: Fronalp; Tessin: Monte-Generoso; Valais: Lötschental-Ried, Grône, Punta Fontana, s/Vernayaz, Pas de Lin s/Saxon, Cry d'Er; Vaud: Les Echadets, grotte à Mahomet entrée, Le Soliat, Glacière de Saint-George, Prévondavaux, Crêt de la Neuve. France: Haute-Savoie: Salève, Mont-Chemnoz, Crêt de Châtillon, Le Môle; Savoie: Mont du Chat. Italy: Cuneo: Valcasotto-Turbiglie, Grotta delle Turbiglie (Besuchet, Löbl, Comellini). Altitude range: to 2200 m. Data on habitats: mousses, au pied chêne, feuilles mortes, terre d'éboulis, lappiaz, terre noire au pied rochers, mousses marais, sous aulnes, sous Picea et Alnus, ravin, fagetum; 26.V.-26.XI. 161 specimens in 28 vials. — It is one of the commonest species in these materials. Besides its terricolous habits, it lives also in the entrance zones of caves.



***Gigalimosina flaviceps* (Zetterstedt, 1847)**

France: Haute-Savoie: Le Môle, 1800 m, 17.VII.79, mousses (Besuchet): 1 ♀. — It is a very rare European species, restricted to Northern Europe and to wet and cool parts of Central Europe (southwards to North Hungary).

***Apteromyia claviventris* (Strobl, 1909)**

Switzerland: Fribourg: Vaulruz-Sâles; Genève: Pregny, Frontenex, Vézenaz; Valais: Sapinhaut; Thurgovie: Güttingen; Vaud: Tour d'Ai. France: Lozère: Villefort; Seine-et-Marne: Forêt de Fontainebleau: Gros-Fouteau (Besuchet, Löbl). Altitude range: only to 1000 m. Data on habitats: mousses, vieilles souches, souches creuses, au pied chêne, au pied platane, au pied marronnier, vieux foin, feuilles mortes, bois pourri, mousses tourbière; 18.I.-27.XI. 51 specimens in 18 vials. — A common terricolous species in Europe, which lives also in the entrance and intermediate zones of the European caves (PAPP & PLACHTER 1976, PAPP 1982). Hitherto no published record for Switzerland. Several specimens in the material were immature, emerged from the samples.

***Herniosina bequaerti* (Villeneuve, 1917)**

Switzerland: Genève: Pregny; Lucerne: Schlüpfheim; Tessin: Bella Vista-Montegeneroso; Vaud: Le Brassus. France: Hautes-Alpes: Céüse, s/Fontgillarde, Abriès; Drôme: Forêt de Saou. Italy: Cuneo: Valcasotto, entrée Grotta delle Turbiglie (Besuchet, Löbl). Altitude range: up to 1500 m. Data on habitats: pied rochers, nid de taupe, mousses, feuilles mortes, tas vieilles branches, tamisage tourbière, vieilles souches; 17.III.-25.X. 14 specimens in 9 vials. — This is one of the sphaerocerid species which are regarded as troglophilous (PAPP 1982) but it lives in runs and nests of small mammals and in wet forest litter of dark cool parts of deciduous forests. The above ecological data represent an important addition to its life-habits.

***Terrilimosina racovitzai* (Bezzi, 1911)**

Turkey: Antakya: Kislak-Senköy, 2.V.78, feuilles mortes (Besuchet-Löbl): 1 ♂. — A West Palaearctic species new to Turkey. The genitalia of this specimen have no considerable differences to the European species. It has been reported from a cave in Afghanistan (RICHARDS 1962), a characteristic troglophilous species of the European caves.

***Terrilimosina schmitzi* (Duda, 1918)**

Switzerland: Valais: Lötschental-Ried, s/Vernayaz; Vaud: Bassins-Arzier, Glacière de Saint-George. France: Ain: Le Grand Crêt d'Eau; Hautes-Alpes: Abriès (Besuchet, Comellini). Altitude range: 750 m to 1600 m. Data on habitats: feuilles mortes, pied rochers, mousses, sous aulnes; 15.VIII.-25.X. 15 specimens in 7 vials. — A Holarctic species but its distribution in Europe restricted to North Europe and to higher altitudes of Central Europe. Its habits have been little known (see PAPP 1973); first records for Switzerland.

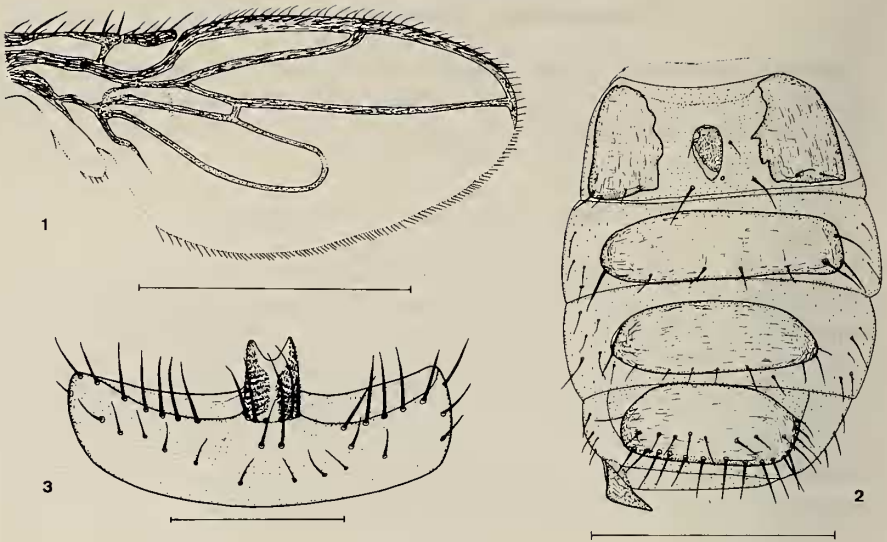


FIG. 1-3.

*Terrilimosina sudetica* (Roháček) male (Switzerland, Moléson), 1: wing; 2: preabdomen in dorsal view; 3: fifth sternum (scales: 0.50 mm for Fig. 1, 2, 0.2 mm for Fig. 3).

### ***Terrilimosina sudetica* (Roháček, 1976)**

Switzerland: Berne: Stockhorn; Glaris: Klöntal/Glärnisch N.; Fribourg: Moléson. Czechoslovakia: Bohemia: Harrachov, Riesengebirge (Besuchet). Altitude range: 1400 to 2000 m. Data on habitats: feuilles mortes, mousses; 26.VII.-1.IX. Five specimens in four vials. — New to Switzerland. All the above specimens are brachypterous; although the species was described as a short-winged form, this is the first time that brachypterous specimens are reported. The wings (Fig. 1) are short and rounded, the abdominal terga much reduced (Fig. 2) but the characteristic chitization of syntergite 1 + 2 is essentially the same as for the full-winged form (ROHÁČEK 1982: Fig. 159). The male sternum 5 (Fig. 3) agrees well with that of the holotype (see ROHÁČEK 1982: Fig. 160).

### ***Kimosina* (*Kimosina*) *ciliata* (Duda, 1918)**

Cyprus: Kalokhorio, 7.IV.81, tamisage dans ravin (Besuchet): 1 ♀, 1 ♂. — It is a rare species of the Mediterranean subregio (for details see ROHÁČEK 1982). New to Cyprus.

### ***Kimosina* (*Kimosina*) *plumosula* (Rondani, 1880)**

Switzerland: Genève: Les Bailleys, Bois du Château près de Vernier; Thurgovie: Kreuzlingen. France: Haute-Savoie: Pont de Dranse; Gard: Goudargues (Besuchet, Baud).

Data on habitats: bord étang, racines graminées, vieux foin; 24.VI.-12.VIII. 15 specimens in 5 vials. — A widespread species new to Switzerland.

**Kimosina (Kimosina) longisetosa** (Dahl, 1909)

Iran: Hamedan: Asadabad, 2.VII.74 (Senglet): 1 ♀. — This datum fits well to its known distribution revised by ROHÁČEK (1980).

**Kimosina (Kimosina) pteremoides** (L. Papp, 1973)

Iran: Azerbaïdjan: Hero-Abad; Lorestan: Azna, 23.VI.-10.VIII (Senglet): 1 ♂, 1 ♀. — Hitherto known only from Afghanistan and Mongolia, new to Iran.

**Kimosina (Alimosina) empirica** (Hutton, 1901)

France: Haute-Savoie: Thonon-Vongy, crue de la Dranse, 12.VII.80 (Besuchet): 1 ♂. — This is a cosmopolitan species owing to human activity. The specimen was emerged from the sifted sample since it is immature, wing inflated. The imagoes of this species are usually collected on carrion.

**Kimosina (Collimosina) spinosa** (Collin, 1930)

Switzerland: Vaud: Chevroux. France: Savoie: Saint-Pierre d'Albigny (Besuchet). Data on habitats: forêt marécageuse, feuilles mortes près Isère; 17.IX.-24.X. Two males. — A very rare species new to Switzerland and to France. ROHÁČEK (1982) separated this species from the other *Kimosina* as a subgenus based first of all on characteristics in the male genitalia.

**Opalimosina (Pappiella) liliputana** (Rondani, 1880)

(= *appendiculata* (Villeneuve, 1918))

Switzerland: Valais: s/Liddes, 1450 m, 24.VI.76, fumier (Besuchet): 1 ♂. France: Hautes-Alpes: s/Fontgillarde, 26.IX.80, mousses, feuilles mortes (Besuchet): 1 ♀. — New to Switzerland. The larvae seem to be saprophagous, the imagoes were collected on compost, in the nests of small mammals and of humble bees.

**Opalimosina (Hackmanina) czernyi** (Duda, 1918)

Switzerland: Valais: s/Haute Nendaz, 2.VII.81, mousses, 1800 m (Besuchet): 1 ♀. — New to Switzerland. It is a seldom collected European species, which is very little known above all owing to its minute size.

**Opalimosina (Dentilimosina) denticulata** (Duda, 1923)

Switzerland: Valais: s/Liddes, 1450 m, 24.VI.76, fumier (Besuchet): 1 ♂, 1 ♀. — New to Switzerland, a rare European species.

**Opalimosina (Opalimosina) mirabilis** (Collin, 1902)

Switzerland: Genève: Vers-Vaux près de Chancy; Vaud: Bavois. France: Haute-Savoie: Charly; Hérault: Ganges, crue de l'Hérault (Besuchet). Data on habitats: mousses, marais, vieilles souches, mousses près Rhône; 16.IV.-21.XI. 10 specimens in 4 vials. — Hitherto no published records for Switzerland, though this species is rather common on dung heaps and in stables of large-scale farms. The above data may refer to the fact that the larvae live not exclusively in dung.

**Minilimosina (Minilimosina) fungicola** (Haliday, 1836)

Switzerland: Fribourg: Gruyères; Vaud: La Dôle; Valais: Lötschental-Ried. Hungary: Kiskunsági N. P.: Lakitelek, Töserdő (Besuchet). Altitude range: up to 1600 m. Data on habitats: feuilles mortes, pied platane, mousses, sous aulnes; 18.VII.-16.X. Nine specimens in four vial. Only one citation from Switzerland (Matile, 1962: 128). — Roháček revised recently this species-group and found that besides new species also the next species had been misidentified as *fungicola*, i.e. all of the occurrence data need revision.

**Minilimosina (Minilimosina) parvula** (Stenhammar, 1854)

Switzerland: Genève: Bois de Versoix, Hermance, Vers-Vaux près de Chancy; Valais: s/Vernayaz (Besuchet). Altitude range: only to 800 m. Data on habitats: nid *Turdus merula*, débris de crue, mousses; 13.II.-20.X. Four specimens. — New to Switzerland.

**Minilimosina (Svarciella) splendens** (Duda, 1928)

Switzerland: Fribourg: Cheyres, 17.IX.81, marais (Besuchet): 1 ♂, 1 ♀. — A seldom collected and little known species new to Switzerland. The imagoes have been collected in wet deciduous forests and on decaying mushrooms.

**Minilimosina (Svarciella) vitripennis** (Zetterstedt, 1847)

Switzerland: Berne: Stockhorn; Valais: Finges; Vaud: La Dôle, Suchet. France: Haute-Savoie: Salève, Le Môle. Cyprus: Tala (Besuchet, Löbl). Altitude range: to 2000 m. Data on habitats: feuilles mortes, vieilles souches pin, mousses; 19.IV.-13.IX. 18 specimens in 7 vials. — New to Switzerland and Cyprus, the first reliable records also for France. It is a terricolous Palaearctic species, its larvae develop probably in mycelia of the forest litter.

***Pullimosina heteroneura* (Haliday, 1836)**

Switzerland: Genève: Frontenex. France: Haute-Savoie: Thonon-Vongy, crue de la Dranse; Hérault: Ganges, crue de l'Hérault. Cyprus: Kritou Terra, Tala, Larnaca, Troodhittissa Monast., Ayios Neophytos Monast. Israel: Mevasseret, Beit Tzevi, Akko (Besuchet, Löbl). Altitude range: to 1400 m. Data on habitats: feuilles mortes, pied tamarix, souche creuse, mousses; 5.IV.-21.XI. 24 specimens in 12 vials. — New to Switzerland, Cyprus and Israel. For its life-habits and distribution see ROHÁČEK (1978).

***Pullimosina mejerei* (Duda, 1918)**

Switzerland: Genève: Frontenex, Vers-Vaux près de Chancy, Bois-du-Château près de Vernier, Pregny; Tessin: Bruzella, Chiasso; Thurgovie: Sommeri, Güttingen; Vaud: Bassins-Arzier. France: Haute-Savoie: Ubine s/Vacheresse. Hungary: Hortobágy N. P.: Egyek, Ohati erdő (Besuchet, Löbl, Comellini). Altitude range: to 1500 m. Data on habitats: mousses, lavage de terre, feuilles mortes, sur sable au bord du Rhône, bord étang, bois pourri, pied chêne, souches creuses, pied rochers, pied marronnier; 18.I.-5.XII. 42 specimens in 15 vials. — New to Switzerland and to France. There are also macropterous specimens in this material, though the majority is brachypterous; numerous specimens emerged from the samples. This species is living in the deeper layers of leaf litter in deciduous forest and the larvae are regarded phytosaprophagous (ROHÁČEK 1978).

***Pullimosina moesta* (Villeneuve, 1917)**

Switzerland: Genève: Les Baillets, Vers-Vaux près de Chancy; Tessin: Bella Vista-Monte-Generoso; Schaffhausen: s/Hallau; Valais: Lötschental-Ried. Hungary: Aggtelek (Besuchet). Altitude range: up to 1600 m. Data on habitats: feuilles mortes, racines graminées, mousses; 5.IV.-16.IX. 18 specimens in 6 vials. — New to Switzerland. A European species with life-habits similar to the species *pullula* and *mejerei*.

***Pullimosina pullula* (Zetterstedt, 1847)**

Switzerland: Fribourg: Vaulruz-Sâles; Genève: Malval, Les Baillets, Bois-du-Château près de Vernier; Saint-Gall: Schwendisee/Unterwasser; Valais: Grône, Punta Fontana; Vaud: Bavois, Prévondavaux. France: Ain: Le Grand-Crêt-d'Eau; Savoie: Saint-Pierre-d'Albigny; Haute-Savoie: Salève, Le Môle (Besuchet). Altitude range: to 1800 m. Data on habitats: mousses au bord lac, racines graminées, bord étang, mousses+feuilles mortes, marais, pied rochers, mousses tourbière; 29.IV.-26.XI. 31 specimens in 15 vials. — New to Switzerland. It seems worth mentioning that all specimens in the above material are females; its parthenogenetic reproduction was experimentally proved; for details of its life habits ROHÁČEK (1978).

***Paralimosina fucata* (Rondani, 1880)**

France: Hérault: Ganges, crue de l'Hérault, 21.XI.82 (Besuchet): 1♂. — New to France. This specimen is immature, its wings are not extended, i.e. it was reared from the sample, so we can suppose that it overwinters as pupae in the soil.

**Paralimosina trichopyga** (Richards, 1952)

Switzerland: Tessin: s/Lac Efra; Valais: Fluhalp/Leukerbad. France: Savoie: Cornet d'Arêches s/Aime (Löbl, Besuchet). Altitude range: 1850 to 2000 m. Data on habitats: rhododendrons, aulnes, mousses; 31.VIII.-15.X. Three specimens. — New to Switzerland and to France. A little known species, hitherto recorded from Austria and Czechoslovakia only. The imagoes have been collected on various kinds of mammal dungs, in forest litter and on decaying fungi.

**Spelobia (Eulimosina) ochripes** (Meigen, 1830)

Switzerland: Fribourg: Vaulruz-Sâles; Genève: Malval, Anières; Tessin: Monte-Generoso; Vaud: Suchet (Besuchet). Altitude range: to 1500 m. Data on habitats: mousses, mousses + lichens, mousses tourbière, touffes herbes; 11.VI.-22.X. Seven specimens in six vials. — A species with large area (Old World and North America) but hitherto no records for Switzerland. It is known as a coprophagous species.

**Spelobia (Spelobia) clunipes** (Meigen, 1830)

Switzerland: Appenzell: Hoher Kasten; Berne: Stockhorn; Fribourg: Vaulruz-Sâles, Moléson; Schwyz: Fronalp; Soleure: Weissenstein; Tessin: Monte-Generoso; Valais: Lötschental-Ried, Cry-d'Er, Lac de Tanay s/Vernayaz, Pas-de-Lin s/Saxon; Vaud: Le Brassus, Glacière de Saint-George, La Dôle, Crêt-de-la-Neuve, Les Echadets, Prévondavaux, Grand-Risoux, Suchet, Le Soliat. France: Hautes-Alpes: Abriès, Col du Lautaret; Haute-Savoie: Mont-Semnoz, Crêt-de-Châtillon, Le Môle, Col de la Colombière, Col des Aravis, Avoriaz, Salève; Savoie: Chartreuse: Mont-Joigny; Drôme: Vercors, Forêt de Lente; Isère: Chartreuse: s/Chalais. Italy: Cuneo: Valcasotto-Turbiglie, entrée Grotta delle Turbiglie (Besuchet, Löbl, Comellini). Altitude range: 800 to 2200 m. Data on habitats: mousses, racines Rumex, ravin, fagetum, feuilles mortes, rhododendrons et pins, tamisages tourbière, sous Picea et Alnus, terre avec racines, mousses + hépatiques, mousses marais; 18.V.-25.X. 801 specimens in 41 vials. — This is the commonest species in these materials. It is almost cosmopolitan, at least partly owing to human activity since the larvae develop also in dung heaps. It is characteristic also for potholes and in the entrance zones of caves. It is probable that the above data are the first reliable ones for its occurrence in Switzerland, except for caves (PAPP 1982).

**Spelobia (Spelobia) manicata** (Richards, 1927)

Switzerland: Bâle: Ob. Belchen; Fribourg: Vaulruz-Sâles; Schwyz: Fronalp; Thurgovie: Sommeri; Valais: Lötschental-Ried; Vaud: Grand Risoux, Le Brassus s/Les Rasses, La Dôle, Bassins-Arzier. France: Haute-Savoie: Grand-Salève, Ubine s/Vacheresse, Le Môle; Hautes-Alpes: Col du Lautaret (Besuchet, Löbl, Comellini). Altitude range: 750 to 1800 m. Data on habitats: mousses, feuilles mortes, tamisages tourbière, lappiaz, pied rochers, sous Picea et Alnus, terre avec racines; 17.VII.-5.XII. 20 specimens in 14 vials. — New to Switzerland and France. It is very close to the preceding species as regards their morphology but *manicata* is a true terricolous species, the larvae live probably in the deeper layers of forest litter and in the nests of small mammals.

**Spelobia (Spelobia) palmata** (Richards, 1927)

Switzerland: Fribourg: Vaulruz-Sâles; Genève: Les Bailleys, Frontenex, Hermance, Pregny; Thurgovie: Kreuzlingen. France: Haute-Savoie: Salève, Charly; Ain: Le Grand Crêt d'Eau. Hungary: Kiskunsági N. P.: Töserdő, Lakitelek. Greece: Crete: Aghia-Evini (Besuchet, Senglet). Altitude range: to 1600 m. Data on habitats: mousses, mousses tourbière, marais, vieilles souches, souche creuse, pied platane, pied rochers; 8.III.-27.X. 12 specimens in 11 vials. — New for the fauna of Switzerland, France and Greece. It is a terricolous species with a wider ecological valence than the former one. It has been collected also on dung and carrion.

**Spelobia (Spelobia) parapsusio** (Dahl, 1909)

Switzerland: Valais: Pas-de-Lin s/Saxon (1 ♂). France: Aude: Montagne d'Alaric (1 ♂, 2 ♀). Italy: Toscane: Vallombrosa (1 ♀) (Besuchet, Löbl). Altitude range: to 1850 m. Data on habitats: feuilles mortes, mousses; 10.VIII.-25.XI. Five specimens in three vials. — New for the fauna of Switzerland and Italy. It is a mycophagous species. The majority of its populations reproduce by parthenogenesis, so it was interesting to find two males in these materials.

**Spelobia (Spelobia) pseudosetaria** (Duda, 1918)

(= *penetralis* (Collin, 1925))

France: Savoie: Cornet d'Arêches s/Aime. Italy: Cuneo: Cantarano, Valcasotto-Turbiglie (Löbl). Altitude range: 730 m to 1900 m. Data on habitats: châtaigniers + hêtres, rhododendrons + aulnes, mousses; 19.VI.-15.X. Five specimens in three vials. — A polysaprophagous Palaearctic species, which is found also in soil.

**Spelobia (Spelobia) rufilabris** (Stenhammar, 1854)

Switzerland: Fribourg: Vaulruz-Sâles; Valais: s/Vernayaz. France: Hautes-Alpes: s/Fontgillarde; Haute-Savoie: Salève; Ain: Le Grand Crêt d'Eau (Besuchet). Altitude range: 800 to 1600 m. Data on habitats: mousses, feuilles mortes, mousses tourbière, pied rochers; 29.IV.-18.X. 36 specimens in 5 vials. — New to Switzerland and to France. A little-known European species with terricolous habits; the imagoes are sometimes found also in runs of small mammals. The larvae are probably living in deeper layers of the forest litter.

**Spelobia (Spelobia) talparum** (Richards, 1927)

Switzerland: Genève: Pregny; Lucerne: Schüpfheim; Vaud: Bavois. France: Haute-Savoie: Le Môle, Grand-Salève; Hautes-Alpes: Céüse. Italy: Cuneo: Cantarano, Valcasotto-Turbiglie, entrée Grotta delle Turbiglie (Besuchet, Löbl). Altitude range: 730 to 1800 m. Data on habitats: nid de taupe (twice), fagetum, mousses, feuilles mortes, souches creuses, châtaigniers + hêtres, pied rochers; 12.II.-28.X. 54 specimens in 9 vials. — New for

the fauna of Italy. It was known as a species living in runs and nests of moles and other small mammals but in all probability it lives also in deep layers of forest litter, in small hollows of rocks, etc.

#### ASTEIIDAE

##### *Asteia (Subanarista) mahunkai* L. Papp, 1979

Israel: Akko, au bord du N. Naaman, 18.IV.1982 (Besuchet-Löbl): 1 ♀. — It was described from Tunisia, new for the fauna of Israel and of the Asiatic part of the Palaearctis. This specimen is much immature and colourless, its wings are inflated; it was reared from the sample.

#### CAMILLIDAE

##### *Camilla acutipennis* (Loew, 1865)

Cyprus: Larnaca, 5.IV.18 (Besuchet): 1 ♂, 1 ♀. — A Mediterranean species, its life-habits are very little known though it seems common in same places.

##### *Camilla atrimana* (Strobl, 1900)

(= *atripes* Duda, 1934)

Hungary: Hortobágy N. P.: Egyek, Ohati erdő, feuilles mortes, 17.VII.1978 (Besuchet): 1 ♀. — This is an immature specimen, emerged from the sifted sample. Its terricolous life-habits have been supposed since long but we have very few definite data for it.

#### DROSOPHILIDAE

##### *Scaptomyza (Parascaptomyza) pallida* (Zetterstedt, 1847)

Switzerland: Valais: s/Vernayaz. France: Haute-Savoie: Pont-de-Dranse, Ubine s/Vacheresse; Hérault: Ganges, crue de l'Hérault; Drôme: Forêt de Saou. Israel: Mevaseret (Besuchet, Löbl, Comellini). Altitude range: to 1500 m. Data on habitats: feuilles mortes, débris de crue, mousses; 30.IV.-21.XI. 15 specimens in 6 vials. — An almost cosmopolitan polisaprophagous species, which breeds also in fruiting bodies of mushrooms (PAPP 1973). The majority of the above specimens were reared from the sifted samples.



**Scaptomyza (Scaptomyza) graminum** (Fallén, 1823)

Switzerland: Tessin: Monte-Generoso, 1650 m, terre et racines graminées, 2.VI.81 (Besuchet): 1 ♀. — A common species, the larvae are miners in leaves of Caryophyllaceae. The pupae are usually in the soil, this way the specimen was reared from the sifted sample.

**Drosophila (Lordiphosa) andalusiaca** Strobl, 1909

Switzerland: Vaud: Ollon, 30.XII.80, vieille souche (Besuchet): 1 ♂. — A species of the south and central parts of West Palearctic. This species as all the other species of the subgenus is partly or exclusively terricolous. The above specimens was emerged from a pupa in a comparatively warm laboratory.

**Drosophila (Lordiphosa) fenestrarum** (Fallén, 1823)

France: Haute-Savoie: Salève, Ubine s/Vacheresse (Besuchet, Comellini). Altitude range: to 1500 m. Data on habitats: tamisages, mousses; 12.VIII.-27.X. Two specimens. — A European species, which is frequently collected but never in mass in deciduous forests.

**Drosophila (Lordiphosa) hexasticha** L. Papp, 1971

Switzerland: Genève: Vers-Vaux près de Chancy, mousses près Rhône. 5.VIII.81 (Besuchet): 1 ♂. — New to Switzerland. This is a freshly emerged specimen which shows a tendency of reduction in wing, which has been found on some specimens in Hungary. A true terricolous species, the larvae are most probably developing in mycelia in forest litter.

**Drosophila (Sophophora) melanogaster** Meigen, 1830

France: Hérault: Ganges, crue de l'Hérault, 21.XI.82 (Besuchet): 2 ♂. — This is far the best known animal species but surely not terricolous. Our specimens were freshly emerged from a sifted sample.

**Drosophila (Sophophora) subobscura** Collin, 1936

France: Hérault: Ganges, crue de l'Hérault, 21.XI.82 (Besuchet): 1 ♀. — A common species caught in mass by malt baits, which pupates in the soil.

**Drosophila (Drosophila) immigrans** Sturtevant, 1921,**Drosophila (Drosophila) hydei** Sturtevant, 1921

France: Hérault: Ganges, crue de l'Hérault, 21.XI.82 (Besuchet): 1 ♂, each. — Cosmopolitan species developing mainly in decaying fruits.

***Drosophila (Drosophila) limbata* von Roser, 1840**

Switzerland: Genève: Vers-Vaux près de Chancy, mousses près Rhône, 5.VIII.81 (Besuchet): 1 ♀. — A Palaearctic species, much rarer than the next one. The larvae develop in mushrooms. This specimen was sifted as pupa from the soil.

***Drosophila (Drosophila) transversa* (Fallén, 1823)**

Switzerland: Vaud: Marchairuz, 1350 m, lappiaz, 11.X.79 (Besuchet): 1 ♂. — A common Palaearctic species developing mass in fruiting bodies of fungi; it pupates in soil and just on soil surface below dead leaves.

## MILICHIIDAE

***Neophyllomyza leanderi* Hendel, 1924**

Switzerland: Genève: Frontenex; Valais: Sapinhaut (Besuchet). Altitude range: to 1000 m. Data on habitats: pied chêne, vieille souche hêtre; 19.VI.-10.VIII. Two females. — New for the fauna of Switzerland, hitherto known from Austria and Romania only. Its life-habits were completely unknown, so the above data seem important also in this respect.

***Phyllomyza donistorpei* Schmitz, 1923**

Switzerland: Valais: Grône, Punta Fontana, 26.VI.80 (Besuchet): 2 ♀. — New to Switzerland. A rare species, which was reared from nests of *Lasius fuliginosus*, imagoes very seldom collected in forests.

***Phyllomyza melania* (Hendel, 1919)**

Switzerland: Genève: Frontenex, souche creuse, 30.V.79 (Besuchet): 3 ♂, 4 ♀. — New to Switzerland, hitherto known only from Austria and Hungary and no data on life-habits. A related species is to be described from Morocco.

***Desmometopa m-nigrum* (Zetterstedt, 1848)**

France: Hérault: Ganges, crue de l'Hérault, 21.XI.82 (Besuchet): 1 ♂, 1 ♀. — An almost cosmopolitan species owing to human activity; the larvae are probably polisaprophagous.

**Madiza britannica** Hennig, 1937

Switzerland: Genève: Collonge, orme creux, 22.VI.80 (Besuchet): 5 ♀. — New for the fauna of Switzerland, described and hitherto known from England. The type-specimens were reared from wood debris; we may suppose that it is seldom collected owing to its special habits.

## CARNIDAE

**Meoneura vagans** (Fallén, 1823)

Switzerland: Valais: Daubensee, sous pierre, 2200 m, 11.IX.80 (Besuchet): 1 ♀. — New to Switzerland, anyway a Holarctic species, which may be polisaprophagous.

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